

Pre-processing quantities

Calculated quantities for a temporal BL in `mesh_evaluation.py`.

Shear velocity

$$u_\tau = U_w \sqrt{\frac{c_f}{2}}$$

Initial velocity profile

$$U_0^+(y) = \frac{U_w^+}{2} + \frac{U_w^+}{2} \tanh \left[\frac{D}{2\theta_{sl}} \left(1 - \frac{y}{D} \right) \right]$$

Shear layer thickness

$$\theta_{sl} \approx \frac{54\nu}{U_w}$$

Initial Courant-Friedrichs-Lewy number

$$Co = \frac{U_w \Delta t}{\Delta x}$$

Initial Péclet number

$$Pé = \frac{U_w \Delta x}{\nu}$$

Initial Numerical Fourier number

$$\mathcal{D} = \frac{\nu \Delta t}{\Delta x^2}$$